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Discussion

Dr Mark Rodefeld *(Indianapolis, Ind)*. Dr Devaney, who is the original discussant for this article, was not able to make it because of weather problems in the United States, so I'll make a few comments.

Fontan circulatory support is really an evolving and still early-stage field. Obviously, the circulatory deficit in Fontan is the lack of a subpulmonary ventricle. So efforts to put a power source back into the circulation had been thought about, and it is a complicated flow situation with multiple directions of flow.

You've shown that a catheter with an inlet and outlet can have problems with recirculation, and therefore some type of barrier to recirculation is going to be required, and obviously using the umbrella is one way to do that. A balloon-type of occlusion is another potential way to do it.

You mentioned thrombogenicity as a concern, and, of course, that would be an immediate concern in the low-pressure circulation. Can you elaborate more in terms of what extent of clot that you saw in your studies. How much clot did you see?

Dr Wang. We have seen the small thrombosis under the umbrellas in 2 of 6 heparinized sheep in the 90-minute experiment. Because an obvious blood stagnant area exists under the umbrellas, we expect more thrombosis formation with longer-term use of the current device and less anticoagulation level. We have a new design to address this thrombosis problem.